# Grade 5—PBA

*This blueprint extends Table D.5 in the ITN[1] into Grade 5, providing more specificity as well as a further iteration of draft design elements covered in the ITN.*

**Part 1a.** Part 1 consists of eight (8) tasks, each worth 1 point[2] (these are tasks of Type 1.1[2]), totaling 8 points in all.

Table 5-PBA(1a) lists Evidence Statements for Part(1a).  Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.

## Table 5-PBA(1a). Blueprint for Grade 5 PBA Part 1a

| No. Tasks[3] | Probability[4] | Claim Code[5] | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices[6] | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 1 | 1/4 | 1 | 5.NBT.1 | Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. | i) Tasks have "thin context"[7] or no context. <br> ii) Tasks involve the decimal point in a substantial way (e.g., by involving, for example, a comparison of a tenths digit to a thousandths digit or a tenths digit to a tens digit). | MP.2,MP.7 | Understand the place value system |
| | 1/4 | 1 | 5.NBT.3a | Read, write and compare decimals to the thousandths. <br><br> a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000) | i) Tasks assess conceptual understanding, e.g. by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.[8] <br> ii) Tasks have "thin context" or no context. | MP.7 | Understand the place value system |
| | 1/4 | 1 | 5.NBT.3b | Read, write and compare decimals to the thousandths. <br><br> b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. | i) Tasks assess conceptual understanding, e.g. by including a mixture (both within and between items) of expanded form, number names, and base ten numerals. <br> ii) Tasks have "thin context" or no context. | MP.7 | Understand the place value system |
| | 1/4 | 1 | 5.NBT.5-1 | Multiply multi-digit whole numbers using the standard algorithm. | i) Tasks do not explicitly assess fluency (for this aspect of standard 5.NBT.5, see Grade 5  EOY Part 1). <br> ii) The given factors are such as to require an efficient/standard algorithm (e.g., 726 × 4871). Factors in the task do not | - | Perform operations with multi-digit whole numbers and with decimals to hundredths. |

| No. Tasks[3] | Probability[4] | Claim Code[5] | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices[6] | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | | | | | suggest any obvious *ad hoc* or mental strategy (as would be present for example in a case such as 7250 × 400).<br>iii) Tasks do not have a context.<br><br>iv) For purposes of assessment, the possibilities are 2-digit × 5-digit, and 3-digit × 4-digit | | |
| 1 | - | 1 | 5.NF.1-1 | Add two fractions with unlike denominators, or subtract two fractions with unlike denominators, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad+bc)/bd.) "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy":* | i) Tasks do not have a context.<br>ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy.<br>iii) Tasks do not include mixed numbers.<br>iv) Tasks may involve fractions greater than 1 (including fractions equal to whole numbers). | MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 1 | 1/6 | 1 | 5.NF.3-1 | Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). | i) Tasks do not have a context. | MP.2 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions |
| | 1/6 | 1 | 5.NF.4a-1 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.<br><br>a For a whole number *q*, interpret the product (*a/b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* | i) Tasks require finding a fractional part of a whole number quantity.<br>ii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7.<br>iii) Tasks have "thin context" or no context. | MP.7 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions |
| | 1/3 | 1 | 5.NF.4a-2 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.<br><br>a For a fraction *q*, interpret the product (*a/b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* | i) Tasks require finding a product of two fractions (neither of the factors equal to a whole number).<br>ii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7.<br>iii) Tasks have "thin context" or no context. | MP.7 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions |
| | 1/6 | 1 | 5.NF.4b-1 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.<br><br>b. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. | i) 50% of the tasks present students with the rectangle dimensions and ask students to find the area; 50% of the tasks give the factions and the product and ask students to show a rectangle to model the problem. | MP.2,<br><br>MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions |
| | 1/6 | 1 | 5.NF.6-1 | Solve real world problems involving multiplication of fractions, e.g., by using visual fraction models or equations to represent the problem. | i) Tasks do not involve mixed numbers.<br>ii) Situations include area and comparison/times as much, with product unknown. (See Table 2, p. 89 of CCSS and Table 3, p. 23 of the *Progression* for Operations and Algebraic Thinking). http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdfiii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.4<br><br>MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions |
| 1 | 1/2 | 1 | 5.MD.3 | Recognize volume as an attribute of solid figures and understand concepts of volume measurement.<br><br>a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.<br>b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. | - | MP.7 | Geometric measuremet: understand concepts of volume and relate volume to multiplication and to addition |
| | 1/2 | 1 | 5.MD.4 | Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. | i) Tasks assess conceptual understanding of volume (see 5.MD.3) as applied to a specific situation—not applying a volume formula. | MP.7 | Geometric measuremet: understand concepts of volume and relate volume to multiplication and to addition |
| 1 | - | 1 | 4.OA.2 | Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. | i) See the progression for Operations and Algebraic Thinking, especially page 29 and Table 3 on page 23)<br>ii)Tasks sample equally the situations in the third row of Table 2 on page 89 of CCSSM. | MP.1 | Use the four operations with whole numbers to solve problems. |

| No. Tasks[3] | Probability[4] | Claim Code[5] | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices[6] | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | | | | | | MP4 and MP.5 | |
| 1 | - | 1 | 4.NBT.1 | Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. | - | MP.7 | Generalize place value understanding for multi-digit whole numbers. |
| 1 | - | 1 | 4.NBT.5-1 | Multiply a whole number of three or four digits by a one-digit whole number using strategies based on place value and the properties of operations. | i) Tasks do not have a context.<br>ii) The illustrate/explain aspect of 4.NBT.5 is not assessed here. | MP.7 | Use place value understanding and properties of operations to perform multi-digit arithmetic. |
| 1 | - | 1 | 4.NF.3d | Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. | ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30).<br>ii) Addition and subtraction situations are limited to the dark- or medium-shaded types in Table 2, p. 9 of the *Progression* for Operations and Algebraic Thinking; these situations are sampled equally.[9]<br>iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1 and MP.4<br><br>MP.5 | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. |

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[9] While Table 2 in the *Progression* for Operations and Algebraic Thinking is phrased in terms appropriate for whole numbers, changes of phrasing are generally necessary in fraction contexts (e.g., "Mike's recipe has 1/8 cup sugar.  Joe's recipe has 5/8 cup sugar. How much more sugar does Joe's recipe have?") The point of referencing Table 2 is to reference the quantitative relationships it describes, not the exact wording of its examples.

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**Part 1b.** Part 1b consists of two (2) tasks worth 2 points each totaling 4 points in all.

Table 5-PBA(1b) (see below) lists evidence statements for Part 1b.  Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.

**Table 5-PBA(1b).** Evidence Statements for Grade 5 PBA Part 1b

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 1 | 1/2 | 1 | 5.NBT.A.Int.1 | Demonstrate understanding of the place value system by combining or synthesizing knowledge and skills articulated in 5.NBT.A. | i) See ITN Appendix F, section A, "Illustrations of Innovative Task Characteristics," subsection 4, "Integrative tasks with machine scoring of responses entered by computer interface," subsection "Illustration at the cluster level." | MP.1, MP.7. | Understand the place value system |
| | 1/2 | 1 | 5.NBT.Int.1 | Perform exact or approximate multiplications and/or divisions that are best done mentally by applying concepts of place value, rather than by applying multi-digit algorithms or written strategies. | i)  Tasks have no context.<br>ii) See ITN Appendix F, section A, "Illustrations of Innovative Task Characteristics," subsection 4, "Integrative tasks with machine scoring of responses entered by computer interface," subsection "Illustrations at the domain level." | MP.1, MP.7. | - |
| 1 | 1/2 | 1 | 5.NF.2-1 | Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. | i) The situation types are those shown in Table 2, p. 9 of the *Progression* for Operations and Algebraic Thinking, sampled equally across rows and, within rows, sampled equally across columns.[11]<br>ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.4<br><br>MP.5 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/2 | 1 | 5.NF.3-2 | Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* | i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.<br>ii) Note that one of the italicized examples in standard 5.NF.3 is a two-prompt problem. | MP.1, MP.4<br><br>MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |

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[11] http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf. While Table 2 in the *Progression* for Operations and Algebraic Thinking is phrased in terms appropriate for whole numbers, changes of phrasing are generally necessary in fraction contexts. The point of referencing Table 2 is to reference the quantitative relationships it describes, not the exact wording of its examples.

**Part 2.**

Sub Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning. The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.

The formulation *"Use drawings, words, and/or equations"* can be useful in tasks generating evidence for Claim C (expressing mathematical reasoning).

Assessing students' expressions of mathematical reasoning typically requires some hand scoring of tasks. However, PARCC is interested in possible technological innovations that can allow tasks assessing this aspect of the standards to be machine scored or partially machine scored. PARCC is also interested in transformative technological innovations that can enrich the range of activities beyond what is possible with a paper test (e.g., assembling shapes to prove or disprove a conjecture).

Part 2 consists of four (4) tasks: two (2) three-point tasks and two (2) four-point tasks, totaling 14 points in all.

Table 5-PBA(2) (see below) lists evidence statements for Part 2. Tasks for this part satisfy the following constraints:

- Each task on Part 2 generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content and process domain is specified by the Form Construction Tables.
- Evidence Statements within a given content or process domain are equally likely to be assessed.
- For Evidence Statements with more than one standard listed within the Content Scope, contractors may select one or more while keeping a balanced pool.

**Table 5-PBA(2).**[13] Evidence Statements for Grade 5 PBA Part 2

| Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|
| 2 | 5.C.1.1 | Base explanations/reasoning on the properties of operations.[14] <br><br> Content Scope: Knowledge and skills articulated in 5.NBT.6 | i) Students need not use technical terms such as *commutative, associative, distributive,* or *property.* <br> ii) Tasks do not have a context | MP.3, MP.7. MP.5, and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 2 | 5.C.1.2 | Base explanations/reasoning on the properties of operations. <br><br> Content Scope: Knowledge and skills articulated in 5.NBT.7 | i) Students need not use technical terms such as *commutative, associative, distributive,* or *property.* <br> ii) Tasks do not have a context | MP.3, MP.7, MP.8. and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 2 | 5.C.1.3 | Base explanations/reasoning on the properties of operations. <br><br> Content Scope: Knowledge and skills articulated in 5.MD.5a | - | MP.2, MP.3,, MP.7 and MP.6 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 2 | 5.C.2.1 | Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.[15] <br><br> Content Scope: Knowledge and skills articulated in 5.NBT.6 | - | MP.3, MP.7, MP.5 and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 2 | 5.C.2.2 | Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. <br><br> Content Scope: Knowledge and skills articulated in 5.NBT.7 | - | MP.3, MP.7. and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |

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[13] This table need not be considered complete or final. For context see Appendix D, "Sub Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning," particularly "Evidence Statements for Sub-Claim C," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim C will include possible candidates for evidence statements for sub-claim C.

[14] Properties of operations are a recurring theme throughout the standards to foster coherence and build a bridge from arithmetic to algebra. "These Standards endeavor to follow [a coherent] design, not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the properties of operations to structure those ideas." (CCSSM, p. 4)

[15] The relationships between inverse operations are a recurring theme throughout the arithmetic progressions in the standards (see 1.OA.4, 1.NBT.4, 1.NBT.6, 2.NBT.5, 2.NBT.7, 3.NBT.2, 3.OA.6, 4.NBT.5, 4.NBT.6, 4.NF.3c, 5.NBT.6, 5.NBT.7, 5.NF.3 (italics), 5.NF.7a (italics), 5.NF.7b (italics), 6.NS.1 (italics), 7.NS.1, 7.NS.2. This list does not include the way that the relationships between inverse operations factor into work with word problems in the OA progression.

| Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|
| 2 | 5.C.2.3 | Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.<br><br>Content Scope: Knowledge and skills articulated in 5.NF.3, 5.NF.4a | - | MP.2, MP.3, MP.7 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 2 | 5.C.2.4 | Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.<br><br>Content Scope: Knowledge and skills articulated in 5.NF.7 | - | MP.3, MP.5, MP.7 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 2 | 5.C.3 | Reason about the place value system itself.[16]<br><br>Content Scope: Knowledge and skills articulated in 5.NBT.A | i) Tasks do not involve reasoning about place value in service of some other goal (e.g., to multiply multi-digit numbers). Rather, tasks involve reasoning directly about the place value system, in ways consistent with the indicated content scope. | MP.3, MP.7 and MP.6 | Understand the place value system |
| 2 | 5.C.4.1 | Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method.<br><br>Content Scope: Knowledge and skills articulated in 5.NF.2 | - | MP.3, MP.5. and MP.6 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 2 | 5.C.4.2 | Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method.<br><br>Content Scope: Knowledge and skills articulated in 5.NF.4b | - | MP.2, MP.3, MP.5 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 2 | 5.C.4.3 | Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method.<br><br>Content Scope: Knowledge and skills articulated in 5.NBT.6 | - | MP.3, MP.5. and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 2 | 5.C.4.4 | Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method.<br><br>Content Scope: Knowledge and skills articulated in 5.NBT.7 | - | MP.3, MP.5. and MP.6 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 2 | 5.C.5.1 | Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response).<br><br>Content Scope: Knowledge and skills articulated in 5.NF.2 | - | MP.2, MP.3, MP.5, MP.7 and MP.6 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 5.C.5.2 | Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response).<br><br>Content Scope: Knowledge and skills articulated in 5.NF.4a | - | MP.3, MP.7 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |

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[16] In grade 4, students generalize understanding of place value for whole numbers, making reasoning about the place value system itself an important species of mathematical reasoning at grade 4. In grade 5, students must knit together whole numbers and decimals into a single system of place value, again making reasoning about the place value system an important species of mathematical reasoning at grade 5.

| Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|
| | 5.C.5.3 | Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response).<br><br>Content Scope: Knowledge and skills articulated in 5.NF.7a, 5.NF.7b | - | MP.3, MP.5, MP.7 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 2 | 5.C.6 | Base explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response).<br><br>Content Scope: Knowledge and skills articulated in 5.MD.C | - | MP.3, MP.5 MP.6 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 2 | 5.C.7.1 | Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning.[17] (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.)<br><br>Content Scope: Knowledge and skills articulated in 5.NF.5b | - | MP.3, MP.7, MP.8 and MP.6 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 2 | 5.C.7.2 | Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.)<br><br>Content Scope: Knowledge and skills articulated in 5.NF.2 | - | MP.3, MP.7. and MP.6 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 2 | 5.C.7.3 | Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.)<br><br>Content Scope: Knowledge and skills articulated in 5.NF.1-1, 5.NF.1-2, 5.NF.1-3, 5.NF.1-4, 5.NF.1-5 | - | MP.3. and MP.6 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 2 | 5.C.8.1 | Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions.<br><br>Content Scope: Knowledge and skills articulated in 5.MD.1 | - | MP.3, MP.5, MP.6 | Convert like measurement units within a given measurement system. |
| 2 | 5.C.8.2 | Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions.<br><br>Content Scope: Knowledge and skills articulated in 5.MD.5c | - | MP.3, MP.5, MP.6 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |

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[17] This is a modification of the draft evidence statement in the ITN. The highlighted words used to say, "explain what it is." This was modified because (i) explaining the flaw in a piece of reasoning is much more difficult than simply presenting a correction of the flawed reasoning; one must not only find the right reasoning, but also articulate just why the flawed reasoning is flawed. That is very difficult even for adults. (ii) Because it is difficult for adults to do, it is also difficult for adults to assess. Rubrics for evaluating explanations of flawed reasoning would be difficult to construct, and the typical grader wouldn't reliably award credit.

**Part 3a.**

Sub Claim D: Highlighted Practice MP.4 with Connections to Content: modeling/application. The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or, for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), *engaging particularly in the Modeling practice*, and where helpful making sense of problems and persevering to solve them (MP.1), reasoning abstractly and quantitatively (MP.2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

Part 3a consists of two (2) tasks, each worth three points, totaling 6 points in all.

- There is one evidence statement for Part 3a, given in Table 3-PBA(3a) below.
- Both tasks should assess the following evidence statement with sufficient variety.
- When utilizing an Evidence Statement from PBA(1a) or PBA(1b) please note the "clarifications, limits and emphases" that accompanies the Evidence Statement.

**Table 5-PBA(3a).[19]** Evidence Statement for Grade 5 PBA Part 3a

| Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|
| 4 | 5.D.1 | Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in Tables 5-PBA(1a) and 5-PBA(1b). | Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to Grade 5. | MP.4 | - |

These problems may involve related practices, particularly: making sense of problems and persevering to solve them (MP.1); reasoning abstractly and quantitatively (MP.2); using appropriate tools strategically (MP.5); and looking for and making use of structure (MP.7).

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[19] This table need not be considered complete or final. For context see Appendix D, "Sub-Claim D: Highlighted Practice MP.4 with Connections to Content: modeling/application," particularly "Evidence Statements for Sub-Claim D," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim D will include possible candidates for evidence statements for sub-claim D.

**Part 3b.**

Sub Claim D: Highlighted Practice MP.4 with Connections to Content: modeling/application. The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or, for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), *engaging particularly in the Modeling practice*, and where helpful making sense of problems and persevering to solve them (MP.1), reasoning abstractly and quantitatively (MP.2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

Part 3b consists of one (1) task worth six points.

There is one evidence statement for Part 3b, given in Table 5-PBA(3b) below.

**Table 5-PBA(3b).**[21] Evidence Statement for Grade 5 PBA Part 3b

| Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|
| 4 | 5.D.2 | Solve multi-step contextual problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in 4.OA, 4.NBT, 4.NF, 4.MD. | Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to Grade 5. | MP.4 | - |

These problems may involve related practices, particularly: making sense of problems and persevering to solve them (MP.1); reasoning abstractly and quantitatively (MP.2); using appropriate tools strategically (MP.5); and looking for and making use of structure (MP.7).

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[21] This table need not be considered complete or final. For context see Appendix D, "Sub Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning," particularly "Evidence Statements for Sub-Claim C," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim C will include possible candidates for evidence statements for sub-claim C.

# Grade 5—EOY

*This blueprint extends Table D.6 in the ITN[22] into Grade 5, providing more specificity as well as a further iteration of draft design elements covered in the ITN.*

**Part 1**. Part 1 consists of twenty-eight (28) tasks, each worth 1 point.[23]

- Each task generates evidence for a single evidence statement in the table.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.

**Table 5-EOY(1).** Blueprint for Grade 5 EOY Part 1

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 1 | 2/3 | 1 | 5.NBT.1 | Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. | i) Tasks have "thin context" or no context.<br>ii) Tasks involve the decimal point in a substantial way (e.g., by involving a comparison of a tenths digit to a thousandths digit or a tenths digit to a tens digit). | MP.2, MP.7 | Understand the place value system |
| | 1/3 | | 5.NBT.2-2 | Use whole-number exponents to denote powers of 10. | i) For the part of standard 5.NBT.2 dealing with explanation, see Grade 5 PBA Part 2. | MP.7 | Understand the place value system |
| 1 | 1/3 | 1 | 5.NBT.3a | Read, write and compare decimals to thousandths.<br><br>a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000) | i) Tasks assess conceptual understanding, e.g. by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.[24]<br>ii) Tasks have "thin context" or no context. | MP.7 | Understand the place value system |
| | 1/3 | 1 | 5.NBT.3b | Read, write and compare decimals to thousandths.<br><br>b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. | i) Tasks assess conceptual understanding, e.g. by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.[25]<br>ii) Tasks have "thin context" or no context. | MP.7 | Understand the place value system |
| | 1/3 | 1 | 5.NBT.4 | Use place value understanding to round decimals to any place. | i) Tasks have "thin context" or no context. | MP.2 | Understand the place value system. |
| 2 | - | 3 | 5.NBT.5 | Fluently multiply multi-digit whole numbers using the standard algorithm. | i) Tasks assess fluency implicitly, simply in virtue of the fact that there are two substantial computations on the EOY. Tasks need not be timed.<br>ii) The given factors are such as to require an efficient/standard algorithm (e.g., 726 × 4871). Factors in the task do not | - | Perform operations with multi-digit whole numbers and with decimals to hundredths. |

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | | | | | suggest any obvious *ad hoc* or mental strategy (as would be present for example in a case such as $7250 \times 400$).<br>iii) Tasks do not have a context.<br>iv) For purposes of assessment, the possibilities are 2-digit $\times$ 5-digit, and 3-digit $\times$ 4-digit | | |
| 1 | - | 1 | 5.NBT.6 | Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. | i) Tasks do not require students to illustrate or explain. (For this part of standard 5.NBT.6, see Grade 5 PBA Part 2.)<br>ii) Tasks involve 3- or 4-digit dividends and one- or two-digit divisors. | MP.1<br><br>MP.5 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 1 | 1/2 | 1 | 5.NBT.7-1 | Add two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | i) Tasks do not have a context.<br>ii) Only the sum is required; explanations are not assessed here. (For this part of standard 5.NBT.7, see Grade 5 PBA Part 2.)<br>iii) Prompts may include visual models, but prompts must also present the addends as numbers, and the answer sought is a number, not a picture.<br>iv) Each addend is greater than or equal to 0.01 and less than or equal to 99.99.<br>v) 20% of cases involve a whole number—either the sum is a whole number, or else one of the addends is a whole number presented without a decimal point. (The addends cannot both be whole numbers.) | MP.5 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| | 1/2 | | 5.NBT.7-2 | Subtract two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | i) Tasks do not have a context.<br>ii) Only the difference is required; explanations are not assessed here. (For this part of standard 5.NBT.7, see Grade 5 PBA Part 2.)<br>iii) Prompts may include visual models, but prompts must also present the subtrahend and minuend as numbers, and the answer sought is a number, not a picture.<br>iv) The subtrahend and minuend are each greater than or equal to 0.01 and less than or equal to 99.99. Positive differences only. (Every included subtraction problem is an unknown-addend problem included in 5.NBT.7-1.)<br>v) 20% of cases involve a whole number—either the difference is a whole number, or the subtrahend is a whole number presented without a decimal point, or the minuend is a whole number presented without a decimal point. (The subtrahend and minuend cannot both be whole numbers.) | MP.7<br><br>MP.5 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| 1 | 1/2 | | 5.NBT.7-3 | Multiply tenths with tenths or tenths with hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | i) Tasks do not have a context.<br>ii) Only the product is required; explanations are not assessed here. (For this part of standard 5.NBT.7, see Grade 5 PBA Part 2.)<br>iii) Prompts may include visual models, but prompts must also present the factors as numbers, and the answer sought is a number, not a picture.<br>iv) Each factor is greater than or equal to 0.01 and less than or equal to 99.99.<br>v) The product must not have any non-zero digits beyond the thousandths place. (For example, 1.67 x 0.34 = 0.5678 is excluded because the product has an 8 beyond the thousandths place; cf. 5.NBT.3, and see p. 17 of the *Progression* for Number and Operations in Base Ten.[26])<br>vi) Problems are 2-digit x 2-digit or 1-digit by 3- or 4-digit. (For example, 7.8 x 5.3 or 0.3 x 18.24.)<br>vi) 20% of cases involve a whole number—either the product is a whole number, or else one factor is a whole number presented without a decimal point. (Both factors cannot both be whole numbers.) | MP.7<br><br>MP.5 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |
| | 1/2 | | 5.NBT.7-4 | Divide in problems involving tenths and/or hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | i) Tasks do not have a context.<br>ii) Only the quotient is required; explanations are not assessed here. (For this part of standard 5.NBT.7<br>, see Grade 5 PBA Part 2.)<br>iii) Prompts may include visual models, but prompts must also present the dividend and divisor as numbers, and the answer sought is a number, not a picture.<br>iv) Divisors are of the form XY, X0, X, X.Y, 0.XY, 0.X, or 0.0X (cf. 5.NBT.6), where X and Y represent non-zero digits. Dividends are of the form XYZ.W, XY0.Z, X00.Y, XY.Z, X0.Y, X.YZ, X.Y, X.0Y, 0.XY, or 0.0X, where X, Y, Z, and W represent non-zero digits.[[Also add XY, X0, and X]]<br>v) Quotients are either whole numbers or else decimals terminating at the tenths or hundredths place. (Every included division problem is an unknown-factor problem included in 5.NBT.7-3.)<br>vi) 20% of cases involve a whole number—either the quotient is a whole number, or the dividend is a whole number presented without a decimal point, or the divisor is a whole number presented without a decimal point. (If the quotient is a whole number, then neither the divisor nor the dividend can be a whole number.) | MP.7<br><br>MP.5 | Perform operations with multi-digit whole numbers and with decimals to hundredths. |

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| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 1 | 1/5 | 1 | 5.NF.1-1 | Add two fractions with unlike denominators, or subtract two fractions with unlike denominators, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad+bc)/bd.)* "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. | MP.6, MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/5 | 1 | 5.NF.1-2 | Add three fractions with no two denominators equal by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum of fractions with like denominators. *For example, 1/2 + 1/3 + 1/4 = (3/6 + 2/6) + 1/4 = 5/6 + 1/4 = 10/12 + 3/12 = 13/12 or alternatively 1/2 + 1/3 + 1/4 = 6/12 + 4/12 + 3/12 = 13/12.* "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. | MP.6, MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/5 | 1 | 5.NF.1-3 | Compute the result of adding two fractions and subtracting a third, where no two denominators are equal, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 1/2 + 1/3 – 1/4 or 7/8 – 1/3 + 1/2.* "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | i) Tasks have no context. iii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Subtraction may be either the first or second operation. The fraction being subtracted must be less than both the other two. | MP.6, MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/5 | 1 | 5.NF.1-4 | Add two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum with like denominators. *For example, 3 1/2 + 2 2/3 = (3 + 2) + (1/2 + 2/3) = 5 + (3/6 + 4/6) = 5 + 7/6 = 5 + 1 + 1/6 = 6 1/6.* "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. | MP.6, MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/5 | 1 | 5.NF.1-5 | Subtract two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent difference with like denominators. *"Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy":* | i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. | MP.6, MP.7 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 1 | 1/2 | 1 | 5.NF.2-1 | Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. | i) The situation types are those shown in Table 2, p. 9 of the *Progression* for Operations and Algebraic Thinking, sampled equally across rows and, within rows, sampled equally across columns.[27] ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.5 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | 1/2 | 1 | 5.NF.2-2 | Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers to word problems involving addition and subtraction of fractions referring to the same whole in cases of unlike denominators. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.* | i) The situation types are those shown in Table 2, p. 9 of the *Progression* for Operations and Algebraic Thinking, sampled equally.[28] ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.2, MP.7 / MP.5 | Use equivalent fractions as a strategy to add and subtract fractions. |
| 1 | 1/3 | 1 | 5.NF.3-1 | Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). | i) Tasks do not have a context. | MP.2 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |

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[27] http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf. While Table 2 in the *Progression* for Operations and Algebraic Thinking is phrased in terms appropriate for whole numbers, changes of phrasing are generally necessary in fraction contexts. The point of referencing Table 2 is to reference the quantitative relationships it describes, not the exact wording of its examples.
[28] http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf. While Table 2 in the *Progression* for Operations and Algebraic Thinking is phrased in terms appropriate for whole numbers, changes of phrasing are generally necessary in fraction contexts. The point of referencing Table 2 is to reference the quantitative relationships it describes, not the exact wording of its examples.

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | 2/3 | 1 | 5.NF.3-2 | Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* | i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. <br> ii) Note that one of the italicized examples in standard 5.NF.3 is a two-prompt problem. | MP.1, MP.4 <br><br> MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 5 | 5/6 | 1 | 5.NF.4a-1 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <br><br> a. For a whole number *q*, interpret the product (*a/b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* | i) Tasks require finding a fractional part of a whole number quantity. <br> ii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7. <br> iii) Tasks have "thin context" or no context. | MP.7 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | 5/6 | 1 | 5.NF.4a-2 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <br><br> a. For a fraction *q*, interpret the product (*a/b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* | i) Tasks require finding a product of two fractions (neither of the factors equal to a whole number). <br> ii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7. <br> iii) Tasks have "thin context" or no context. | MP.7 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | 5/6 | 1 | 5.NF.4b-1 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <br><br> b. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. | i) 50% of the tasks present students with the rectangle dimensions and ask students to find the area; 50% of the tasks give the factions and the product and ask students to show a rectangle to model the problem. | MP.2 <br><br> MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | 5/6 | 1 | 5.NF.5a | Interpret multiplication as scaling (resizing), by: <br><br> a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. | i) Insofar as possible, tasks are designed to be completed without performing the indicated multiplication. <br> ii) Products involve at least one factor that is a fraction or mixed number. | MP.7, MP.8 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | 5/6 | 1 | 5.NF.6-1 | Solve real world problems involving multiplication of fractions, e.g., by using visual fraction models or equations to represent the problem. | i) Tasks do not involve mixed numbers. <br> ii) Situations include area and comparison/times as much, with product unknown. (See Table 2, p. 89 of CCSS and Table 3, p. 23 of the *Progression* for Operations and Algebraic Thinking). http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf <br> iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.4 <br><br> MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | 5/6 | 1 | 5.NF.6-2 | Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | i) Tasks present one or both factors in the form of a mixed number. <br> ii) Situations include area and comparison/times as much, with product unknown. <br> iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.2 <br><br> MP.5 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 1 | - | 1 | 5.NF.7a | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[29] | - | MP.5, MP.7 | Apply and extend previous understandings of multiplication and division to |

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[29] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade. *(Footnote in CCSSM, p. 36.)*

Grade 5 / EOY / Part 1

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | | | | a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.* | | | multiply and divide fractions. |
| 1 | - | 1 | 5.NF.7b | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[30]<br><br>b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.* | - | MP.5, MP.7 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 1 | - | 1 | 5.NF.7c | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[31]<br><br>c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?* | i) Tasks involve equal group (partition) situations with part size unknown and number of parts unknown. (See Table 2, CCSS p 89)<br>ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.2, MP.7 / MP.5, | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| 1 | 1/4 | 1 | 5.MD.3 | Recognize volume as an attribute of solid figures and understand concepts of volume measurement.<br><br>a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.<br>b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. | - | MP.7 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| | 3/4 | 1 | 5.MD.4 | Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. | i) Tasks assess conceptual understanding of volume (see 5.MD.3) as applied to a specific situation—not applying a volume formula. | MP.7 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 1 | - | 1 | 5.MD.5b | Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.<br><br>b. Apply the formulas V = l × w × h and V = B × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. | i) Pool should contain tasks with and without contexts.<br>ii) 50% of tasks involve use of V = l × w × h , 50% of tasks involve use of V = B × h. | MP5, MP.7 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 1 | - | 1 | 4.NBT.6-1 | Find whole-number quotients and remainders with three-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. | i) Tasks do not have a context.<br>ii) The illustrate/explain aspect of 4.NBT.5 is not assessed here. (For this aspect of the standard, see Grade 4 PBA Part 2.) | MP.7 and MP.8 | Use place value understanding and properties of operations to perform multi-digit arithmetic. |
| 1 | - | 1 | 4.NF.1-2 | Use the principle a/b = (nxa)/(nxb) to recognize and generate equivalent fractions. | i) The explanation aspect of 4.NF.1 is not assessed here.<br>ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30).<br>iii) Tasks may include fractions that equal whole numbers. | MP.7 | Extend understand of fraction equivalence and ordering. |

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[30] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade. *(Footnote in CCSSM, p. 36.)*
[31] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade. *(Footnote in CCSSM, p. 36.)*

Grade 5 / EOY / Part 1

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 1 | - | 1 | 4.NF.2-1 | Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or by comparing to a benchmark fraction such as 1/2. Record the results of comparisons with symbols <, =, or <. | i) For the justification aspect of 4.NF.2, see Grade 4 PBA Part 2. ii) For the aspect of recognizing that fraction comparisons are valid only when the two fractions refer to the same whole, see Grade 4 PBA Part 2. iii) Tasks require the student to choose the comparison strategy autonomously. iv) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30). v) Tasks may include fractions that equal whole numbers. | MP.6 and MP.7 | Extend understanding of fraction equivalent and ordering. |
| 1 | - | 1 | 4.NF.3b-1 | Understand a fraction a/b with a>1 as a sum of fractions 1/b. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. *Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* | i) Only the answer is required (methods, representation, etc. are not assessed here); for the justification portion of 4.NF.3b see Grade 4 PBA Part 2. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30). iii) Tasks may include fractions that equal whole numbers. | MP.7 and MP.8 | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. |
| 1 | - | 1 | 4.NF.3c | Understand a fraction a/b with a>1 as a sum of fractions 1/b. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. | i) Tasks do not have a context. ii) Denominators are limited to grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower. (See footnote in CCSSM, p. 24) | MP.7 | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. |
| 1 | - | 1 | 4.NF.4b-1 | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b) Understand a multiple of a/b as a multiple of 1/b. *For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5).* | i) Tasks do not have a context. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Tasks involve expressing a multiple of a/b as a multiple of 1/b. iv) Results may equal fractions greater than 1 (including those equal to whole numbers). v) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30). | MP.5, MP.7 | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. |
| 1 | - | 1 | 4.NF.4c | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? | i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ii) Situations are limited to those in which the product is unknown (situations do not include unknown factors). iii) Situations involve a whole number of fractional quantities—not a fraction of a whole-number quantity. iv) Results may equal fractions greater than 1 (including those equal to whole numbers). v) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12 (CCSSM footnote, p. 30). | MP.1.,MP.4 / MP.5 | Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. |
| 1 | - | 1 | 4.NF.7 | Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. | i) Tasks have "thin context" or no context. ii) Justifying conclusions is not assessed here; for this aspect of the standard, see Grade 4 PBA Part 2. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.7 / MP.5 | Understand decimal notation for fractions, and compare decimal fractions. |

**Part 2**. Part 2 consists of ten (10) tasks, each worth 1 point.[32] Table 5-EOY(2) lists Evidence Statements for Part 2.  Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.

**Table 5-EOY(2).** Blueprint for Grade 5 EOY Part 2

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area) |
|---|---|---|---|---|---|---|---|
|  | 2/3 | 5 | 5.OA.1 | Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. | i) Expressions have depth no greater than two, e.g., 3×[5 + (8 ÷ 2)] is acceptable but 3×[5 + (8 ÷ {4−2})] is not. | MP.7 | Write and interpret numerical expressions. |
| 2 | 2/3 | 5 | 5.OA.2-1 | Write simple expressions that record calculations with numbers, *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7).* | i) Note that expressions elsewhere in CCSSM are thought of as recording calculations with numbers (or letters standing for numbers) as well; see for example 6.EE.2a. See also the first paragraph of the *Progression* for Expressions and Equations.[33] | MP.7 | Write and interpret numerical expressions. |
|  | 2/3 | 5 | 5.OA.2-2 | Interpret numerical expressions without evaluating them.  *For example, recognize that 3 x (18932 + 921) is three times as large as 18932 + 921 without having to calculate the indicated sum or product.* | - | MP.7 | Write and interpret numerical expressions. |
| 1 | - | 5 | 5.OA.3 | Generate two numerical patterns using two given rules.  Identify apparent relationships between corresponding terms.  Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence.  Explain informally why this is so.* | - | MP.3, MP.8 | Analyze patterns and relationships |
| 1 | - | 5 | 5.MD.1-1 | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m). | - | MP.5, MP.6 | Convert like measurement units within a given measurement system. |
| 1 | 1/3 | 5 | 5.MD.2-1 | Make a line plot to display a data set of measurements in fractions of a unit (1/2, ¼, 1/8) | - | MP.5 | Represent and interpret data. |
|  | 2/3 | 5 | 5.MD.2-2 | Use operations on fractions for this grade (knowledge and skills articulated in 5.NF) to solve problems involving information in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total* | - | MP.5 | Represent and interpret data. |

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[32] These are tasks of Type I.1; see Table D.2, "Task Types and Descriptions," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf.
[33] http://commoncoretools.files.wordpress.com/2011/04/ccss_progression_ee_2011_04_25.pdf

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| | | | | *amount in all the beakers were redistributed equally.* | | | |
| 2 | - | 5 | 5.G.1 | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate). | i) Tasks probe student understanding of the coordinate plane as a representation scheme, with essential features as articulated in standard 5.G.1. | MP.2, MP.5 | Graph points on the coordinate plane to solve real-world and mathematical problems. |
| 1 | - | 5 | 5.G.3 | Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. | - | MP.7 / MP.5 | Classify two-dimensional figures into categories based on their properties. |
| 2 | - | 5 | 5.G.4 | Classify two-dimensional figures in a hierarchy based on properties. | - | MP.7 / MP.5 | Classify two-dimensional figures into categories based on their properties. |

Part 3. Part 3 consists of eight (8) tasks worth 2 points totaling 16 points in all.

Table 5-EOY(3) (see below) lists evidence statements for Part 3.

- Each task on Part 3 generates evidence for a single evidence statement in the table and each Evidence Statement is assessed by at most one task.
- The distribution of tasks across content areas is specified by the Form Construction Tables.
- All Integrative Evidence Statements that cut across two or more content domains are equally likely to be assessed.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- When multiple standards are listed within the Content Scope, the contractor must use the first standard and 1 or more of the subsequent standards listed while keeping a balanced pool.

**Table 5-EOY(3).** Evidence Statements for Grade 5 EOY Part 3

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area) |
|---|---|---|---|---|---|---|---|
| 1 | 1, 5 | | 5.Int.1 | Solve one-step word problems involving multiplying multi-digit whole numbers. | i) The given factors are such as to require an efficient/standard algorithm (e.g., 726 × 4871). Factors in the task do not suggest any obvious *ad hoc* or mental strategy (as would be present for example in a case such as 7250 × 400). ii) For purposes of assessment, the possibilities are 2-digit × 5-digit, and 3-digit × 4-digit | MP.1, MP.7 | Multiple |
| 1 | | 1 | 5.NBT.Int.1 | Perform exact or approximate multiplications and/or divisions that are best done mentally by applying concepts of place value, rather than by applying multi-digit algorithms or written strategies. | i) Tasks do not have a context. ii) See ITN Appendix F, section A, "Illustrations of Innovative Task Characteristics," subsection 4, "Integrative tasks with machine scoring of responses entered by computer interface," subsection "Illustrations at the domain level." | MP.1, MP.7. | 5.NBT.A, 5.NBT.B |
| 1 | | 1 | 5.NBT.A.Int.1 | Demonstrate understanding of the place value system by combining or synthesizing knowledge and skills articulated in 5.NBT.A. "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | i) See ITN Appendix F, section A, "Illustrations of Innovative Task Characteristics," subsection 4, "Integrative tasks with machine scoring of responses entered by computer interface," subsection "Illustration at the cluster level." | MP.1, MP.7. | Understand the place value system. |
| | 2/3 | 1 | 5.NF.A.Int.1 | Solve word problems involving knowledge and skills articulated in 5.NF.1-1, 5.NF.1-2, 5.NF.1-3, 5.NF.1-4, and 5.NF.1-5. "Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy": | | MP.4, MP.1, MP.5 | Use equivalent fractions as a strategy to add and subtract fractions. |
| | | 1 | 5.NF.2-1 | Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. | i) The situation types are those shown in Table 2, p. 9 of the *Progression* for Operations and Algebraic Thinking, sampled equally across rows and, within rows, sampled equally across columns.[35] ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.4 | Use equivalent fractions as a strategy to add and subtract fractions. |

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[35] http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf. While Table 2 in the *Progression* for Operations and Algebraic Thinking is phrased in terms appropriate for whole numbers, changes of phrasing are generally necessary in fraction contexts. The point of referencing Table 2 is to reference the quantitative relationships it describes, not the exact wording of its examples.

| No. Tasks | Probability | Claim Code | Evidence Statement Key | Evidence Statement Text | Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks | Relationship to Mathematical Practices | *Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)* |
|---|---|---|---|---|---|---|---|
| 2 | 2/3 | | | | | MP.5 | |
| | 2/3 | 1 | 5.NF.3-2 | Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* | i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. | MP.1, MP.4 | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. |
| | | | | | ii) Note that one of the italicized examples in standard 5.NF.3 is a two-prompt problem. | MP.5 | |
| 1 | - | 5 | 5.MD.1-2 | Solve multi-step, real world problems requiring conversion among different-sized standard measurement units within a given measurement system. | - | MP.1, MP.6 | Convert like measurement units within a given measurement system. |
| 1 | - | 1 | 5.MD.5c | Relate the operations of multiplication and addition and solve real world and mathematical problems involving volume.<br><br>c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. | i) Tasks require students to solve a contextual problem by applying the indicated concepts and skills. | MP.2, MP.5 | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. |
| 1 | - | 5 | 5.G.2 | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | - | MP.1, MP.5 | Graph points on the coordinate plane to solve real-world and mathematical problems. |

## Grade 5 Summary

Number of **Tasks** by Type and Component

| Type | PBA(1) | PBA(2) | PBA(3) | EOY | Total | |
|---|---|---|---|---|---|---|
| I.1 Single-prompt tasks worth 1 point | 8 | | | 38 | 46 | *50% of pts* |
| tasks worth 2 points | | 2 | | 8 | 10 | |
| I.4 Three-prompt tasks worth 3 points | | | | | | |
| I.5 Four-prompt tasks worth 4 points | | | | | | |
| I.6 Five- or six-prompt tasks worth 5 or 6 points | | | | | | |
| II / 3 points | | 2 | | | 2 | |
| II / 4 points | | 2 | | | 2 | |
| III / 3 points | | | 2 | | 2 | |
| III / 6 points | | | | 1 | 1 | |

Mean points per task (MPPT):[36]

| Component | Points | Tasks | MPPT |
|---|---|---|---|
| PBA.1a | 8 | 8 | 1.00 |
| PBA.1b | 4 | 2 | 2 |
| PBA.2 | 14 | 4 | 3.50 |
| PBA.3 | 12 | 3 | 4.00 |
| EOY.1 | 30 | 30 | 1.00 |
| EOY.2 | 8 | 8 | 1.00 |
| EOY.3 | 16 | 8 | 2.00 |
| *Overall* | **92** | **63** | **1.46** |

Number of points by sub-claim (disjoint categories)

| Claim Code | Sub-Claim | Gr. N | Gr. N-1 | Total |
|---|---|---|---|---|
| 1 | A but not C or E | 37 | 12 | 49 |
| 2 | A and C | 14 | | 14 |
| 3 | A and E | | | |
| 4 | D | 8 | 6 | 14 |
| 5 | B | 15 | | 15 |
| | *Total* | **74** | **18** | **92** |

**Approximate Points by Grade, Cluster and Domain**

Does not include Sub-Claim D Modeling/application, or previous grade. Italicized numbers are the sum of points located to the left and below. Some entries are approximate; roundoff errors may lead to apparent inconsistencies. True total is shown in parentheses.

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[36] Mean points per task (MPPT) is tabulated as a rough measure of "surface richness" of the test. Note for comparison that MCAS grade 8 has MPPT = 54/42 = 1.28. A related heuristic is the fraction of total points arising from 1-point tasks (Type I.1). A target for this is 50%-60%, with high school at the higher end of the range.

| Standard | | | | |
|---|---|---|---|---|
| Grade 5 | 2 | | 2 | 69 |
| 5.OA | | | 3 | |
| 5.OA.A | | 2 | | 2 |
| 5.OA.Ax | 2 | | | |
| 5.OA.B | | 1 | | 1 |
| 5.OA.Bx | 1 | | | |
| 5.NBT | 2 | | 18 | |
| 5.NBT.A | 3 | 6 | | 6 |
| 5.NBT.Ax | 3 | | | |
| 5.NBT.B | | 9 | | 9 |
| 5.NBT.Bx | 9 | | | |
| 5.NF | | | 27 | |
| 5.NF.A | 2 | 10 | | 10 |
| 5.NF.Ax | 8 | | | |
| 5.NF.B | | 17 | | 17 |
| 5.NF.Bx | 17 | | | |
| 5.MD | | | 12 | |
| 5.MD.A | | 4 | | 4 |
| 5.MD.Ax | 4 | | | |
| 5.MD.B | | 1 | | 1 |
| 5.MD.Bx | 1 | | | |
| 5.MD.C | 1 | 7 | | 7 |
| 5.MD.Cx | 6 | | | |
| 5.G | | | 7 | |
| 5.G.A | | 4 | | 4 |
| 5.G.Ax | 3 | | | |
| 5.G.B | | 3 | | 3 |
| 5.G.Bx | 3 | | | |

**Mathematical Practices**

- Coverage constraint: Each MP is represented by at least one practice-forward task:
- Content integration constraint (in each content domain, there is at least one task associated with one or more MPs):
- Practice weight constraint: Percent of points from tasks that are practice-forward or practice-related: $\geq$ XX%